WHAT IS CLAIMED IS:

1. An apparatus for processing a semiconductor wafer, comprising:

a processing chamber;

a generally horizontal, rotatably mounted susceptor positioned in the chamber;

one or more spacers to support a wafer spaced above the susceptor;

a ring surrounding said susceptor and having a generally rectangular exterior; and

heat sources to heat the susceptor and the ring; and

a process gas injector for flowing gas across the upper surface of the heated wafer and the ring to be uniformly deposited on the wafer;

said susceptor including passages for introducing sweep gas between the susceptor and the wafer to provide backside protection to the wafer.

2. The apparatus of Claim 1, wherein said heat source includes a heat bank spaced above the wafer and configured to define a generally rectangular heat pattern aligned with the rectangular ring.

3. The apparatus of Claim 2, wherein said heat source includes a heat bank spaced below the susceptor and configured to define a generally rectangular heat pattern aligned with the rectangular ring.

4. The apparatus of Claim 1, wherein said chamber in the area of the susceptor and the ring has a generally rectangular cross section generally perpendicular to the gas flow.

5. Apparatus for processing a semiconductor wafer comprising:

a chamber;

a susceptor in said chamber;

a process gas inlet to said chamber to flow processing gas into the chamber and across an upper surface of the susceptor;

one or more spacers protruding above an upper surface of a recess formed in said susceptor and supporting a wafer with a gap between the wafer and the susceptor, said susceptor being located so that said process gas flows across the upper surface of said wafer;

said susceptor upper surface having one or more sweep gas outlets; and

one or more gas channels in said susceptor for flowing sweep gas through said outlet and into the gap beneath the wafer to prevent process gas from flowing into said gap.

6. The apparatus of Claim 5, wherein said susceptor is formed of two sections that fit together to form said channels.

7. The apparatus of Claim 5, including a susceptor support having arms, at least one of said arms including a passage for conducting gas to the channels in said susceptor.

8. The apparatus of Claim 5, including apertures in said susceptor for receiving and retaining said spacers, said apertures being sized slightly larger than said spacers to provide some clearance therebetween, wherein some of said channels lead to said apertures to allow gas flow around said spacers into the gap beneath the wafer.

9. An apparatus for processing semiconductor wafers at elevated temperatures comprising:

a susceptor to be positioned in a high temperature processing chamber, said susceptor including a lower section and a substantially disc shaped upper section having a lower surface in engagement with an upper surface of said lower section;

one or more gas channels in said susceptor;

one or more gas inlets in said lower section opening to its lower surface and said channels; and

one or more gas outlets in said upper section opening to the upper surface of said upper section in an area beneath that in which a wafer to be processed is to be positioned, said outlets being open to said channels and thus connected to said inlets.

10. The apparatus of Claim 9, wherein one of said sections has an outer diameter larger than that of the other section, said larger section having a recess in which the other section is positioned.

11. The apparatus of Claim 10, wherein said recess is formed in a lower surface of said upper section.

12. The apparatus of Claim 9, wherein said channels are formed by grooves in the side of one of the sections facing the other section, with said grooves being closed by the other section.

13. The apparatus of Claim 9, wherein there are three of said inlets each opening to said channels, said channels being interconnected to allow gas flow throughout.

14. The apparatus of Claim 9, wherein said outlets are located in a central portion of said upper section and said inlets are located radially outward from the outlets, said channels having a length longer than the shortest possible distance extending between any of said inlets and said outlets.

15. The apparatus of Claim 9, including

a plurality of spacers which stably support the wafer to be processed protruding above the upper surface of said upper section to support a wafer spaced from the upper section.

16. The apparatus of Claim 15, including a recess in the upper surface of said upper section with a depth greater than the height of said spacers protruding above said upper surface so that the wafer to be positioned thereon fits within said upper recess and does not project substantially above a top surface of said susceptor.

17. The apparatus of Claim 15, wherein said spacers have rounded upper ends to engage the lower surface of a wafer, with only minimal contact with the wafer.

18. The apparatus of Claim 15, including apertures in said upper section for receiving and retaining said spacers, said apertures being sized slightly larger than said spacers to provide some clearance therebetween.

19. The apparatus of Claim 17, wherein some of said channels are formed by grooves in the lower surface of said upper section closed by the upper surface of said lower section, the grooves leading to said apertures to allow gas flow around said spacers.

20. The apparatus of Claim 9, wherein there are at least three of said gas inlets in said lower section, with said gas inlets being symmetrically spaced around a center of the susceptor, and said gas inlets being adapted to receive tubular arms which support the susceptor and conducts gas into said inlets.

21. The apparatus of Claim 9, including a support having at a plurality of spaced arms having upper ends which engage said gas inlets, said arms being tubular so as to be able to conduct gas to said gas inlets.

22. The apparatus of Claim 21, including a shaft connected to said support arms for rotating said shaft together with said susceptor.

23. The apparatus of Claim 9, wherein said disc shaped lower section and said disc shaped upper section have engaging portions to prevent relative rotation therebetween.

24. An apparatus for processing a semiconductor wafer at an elevated temperature comprising:

a substantially disc-shaped susceptor having one or more gas channels formed therein with one or more gas inlets to said channels, said inlets open to a lower surface of said susceptor, and one or more gas outlets open to an upper surface of said susceptor; and

a support for said susceptor including a plurality of support arms having upper ends to engage the lower surface of said susceptor to support the susceptor, one or more of said arms being tubular so that gas may be conducted through said tubular arms into said inlets.

25. The apparatus of Claim 24, wherein the upper ends of said support arms drivingly engage the lower surface of the susceptor so that rotation of the said arms rotates said susceptor.

26. The apparatus of Claim 24, wherein said susceptor is formed of two mating sections, with said channels being formed in the surface of one of said sections, facing the other of said sections, said channels being open to the other of said sections so that said other section forms a wall of said channels.

27. The apparatus of Claim 26, wherein said gas inlets are located spaced outwardly from the center of the susceptor, and said gas outlets are located spaced radially outwardly from the center of the susceptor and radially inward from said gas inlets, and wherein said channels extend nonlinearly between said inlets and said outlets.

28. The apparatus of Claim 27, wherein said channels extend outwardly from said inlets, continue circumferentially adjacent the periphery of the susceptor lower section and finally are directed radially inwardly to said gas outlets.

29. The apparatus of Claim 26, wherein said mating sections comprise a substantially a lower section and a substantially disc shaped upper section having a lower

surface in engagement with an upper surface of said lower section, said apparatus including one or more spacers extending upwardly from the upper surface of said susceptor to support a wafer slightly spaced from the susceptor to permit gas from said outlets to flow beneath the wafer.

30. The apparatus of Claim 29, comprising apertures in said upper section for receiving and retaining said spacers, said apertures being sized slightly larger than said spacers to provide some clearance therebetween, wherein some of said channels are formed in the lower surface of said upper section and lead to said apertures to allow gas flow around said spacers, and wherein some of said channels are formed by grooves in the upper surface of said lower section with said grooves being closed by the lower surface of said upper section, the grooves leading to said outlets.

31. The apparatus of Claim 29, wherein said susceptor upper surface has a shallow recess with a depth greater than the height of said spacers so that the wafer to be positioned thereon fits within said upper recess and does not project substantially above a top surface of said susceptor.

32. The apparatus of Claim 24, including a plurality of spacers extending upwardly from the upper surface of said susceptor to support a wafer spaced from the susceptor to permit gas from said outlets to flow beneath the wafer.

33. The apparatus of Claim 32, including apertures in said susceptor for receiving and retaining said spacers, said apertures being sized slightly larger than said spacers to provide some clearance therebetween, and wherein some of said channels are in communication with said apertures to allow gas flow around said spacers.

34. An apparatus for chemical vapor deposition on a semiconductor wafer comprising:

a deposition chamber having a process gas inlet for injecting process gases into the chamber;

a single susceptor in the chamber for supporting a semiconductor wafer; and

a support for said susceptor including a plurality of support arms, one or more of said arms being tubular and in registry with inlets in the susceptor so that gas may be conducted through said tubular arms into said inlets.

35. The apparatus of Claim 34, including a tubular shaft supporting said arms and in communication with the support arms so that gas may be conducted upwardly through the shaft and through the support arms.

36. A method of supporting a semiconductor wafer in a processing chamber and conducting gas flow beneath the wafer comprising the steps of:

positioning a wafer on a plurality of spacers protruding upwardly from an upper surface of a susceptor to support the wafer and forming a gap between the wafer and the upper surface of the susceptor;

supporting said susceptor on a plurality of arms having upper ends engaging a lower surface of said susceptor;

flowing gas through one or more of said arms into passages in the susceptor which open to said gap; and

allowing the gas to flow outwardly beyond the periphery of the wafer.

37. The method of Claim 36, including the steps of:

positioning said spacers in apertures in said susceptor; and

flowing some of said gas from said arms through said susceptor passages and into said gap via said apertures surrounding said spacers.

38. A method of processing a semiconductor wafer, comprising the steps of:

positioning a wafer on a plurality of fixed spacers projecting slightly above an upper surface of a susceptor in a processing chamber, said spacers having upper ends shaped to minimize contact with the wafer and the susceptor;

heating the wafer by means located outside the chamber;

flowing process gas over the upper surface of the wafer while it is supported on said spacers; and

flowing sweep gas through a plurality of channels in the susceptor to a plurality of outlets in the upper surface of the susceptor to cause the sweep gas to flow beneath the wafer and prevent process gas from flowing beneath the wafer.

39. The method of Claim 38, wherein said step of flowing comprises flowing sweep gas into one or more circular delivery channels in the susceptor in communication with a corresponding one or more circular patterns of said outlets.

40. The method of Claim 38, including the steps of removing the wafer from the susceptor and processing chamber, and flowing sweep gas through apertures in said susceptor surrounding said spacers to protect said spacers from deteriorating effects of a processing chamber environment.

41. An apparatus for supporting a wafer in a semiconductor processing environment, comprising:

a susceptor lower section; and

a plurality of substantially disk-shaped upper sections each adapted to register concentrically with said lower section, said upper sections each having a shallow wafer recess sized differently than said other upper sections to enable selection of said upper section depending on the size of wafer to be processed.

42. The apparatus of Claim 41, wherein said lower section includes a plurality of cavities in a bottom surface for receiving arms of a susceptor support.

43. The apparatus of Claim 42, wherein said lower section includes gas passages and said plurality of upper sections include outlets open to said recess and to said passages for introducing sweep gas under said wafers during processing.

44. The apparatus of Claim 43, wherein said lower section includes apertures from said passages to said cavities for receiving said sweep gas through said cavities.

45. The apparatus of Claim 41, including at least two upper sections for processing wafers having diameters greater than 100 mm.

46. The apparatus of Claim 41, including an upper section for processing a wafer having a diameter of 100 mm.

47. The apparatus of Claim 41, including a plurality of spacers adapted to fit within apertures in said upper sections and project into said recess for supporting wafers over said susceptor.

48. The apparatus of Claim 47, wherein said lower section includes gas passages and said plurality of upper sections include channels in communication with said passages and said spacers apertures for introducing sweep gas around said spacers and between said susceptor and said wafers.

49. A combination for supporting different sized wafers in a semiconductor processing environment, comprising:

a first substantially disk-shaped upper susceptor section having a lower surface and a shallow wafer recess in an upper surface sized to concentrically receive a first wafer to be processed; and

a second disk-shaped upper susceptor section having a lower surface and a shallow wafer recess in an upper surface sized to receive a wafer to be processed, having a different diameter from said first wafer, and wherein the lower surfaces of said first and second upper sections are identical.

50. An apparatus for processing a semiconductor substrate at an elevated temperature comprising:

a substantially disc-shaped susceptor having an upper surface and gas passages formed therein with one or more gas inlets to said passages;

one or more spacers extending upwardly from the upper surface of said susceptor to support a substrate spaced from the susceptor and permit gas to flow beneath the wafer; and

channels formed in said susceptor to flow gas from said inlets to regions above said upper surface and proximate said spacers.

51. The apparatus of Claim 50, wherein said spacers are made of sapphire, quartz, silicon carbide, silicon nitride, boron carbide, or other high temperature, resistant material capable of withstanding extreme temperatures and the chemical environment of said apparatus.

52. The apparatus of Claim 50, wherein said spacers are coated with Si, SiO_2, SiC or Si_3N_4.

53. The apparatus of Claim 50, wherein said spacers extend above the upper surface of the susceptor a distance about three times the thickness of the wafer.

54. The apparatus of Claim 50, wherein said spacers extend above the susceptor in a range between .010 and .200 inches.

55. The apparatus of Claim 50, wherein the spacers extend about .075 inches above the susceptor.

56. An apparatus for processing a semiconductor substrate at an elevated temperature comprising:

a substantially disc-shaped susceptor having a recess in a top surface for receiving a substrate to be processed; and

gas channels formed in said susceptor with one or more gas inlets in said susceptor to said channels, and one or more gas outlets open to said recess, wherein said gas inlets and said gas outlets are located spaced radially outwardly from the center of the susceptor, said gas outlets being located radially inward from said gas inlets, and wherein said channels extend nonlinearly between said inlets and said outlets.

57. A susceptor for supporting a wafer in a semiconductor processing environment, comprising:

a substantially disk-shaped upper section having a shallow wafer recess in a top surface with a diameter depending on the size of a wafer selected to be processed, and a recess in a bottom surface for mating with a lower section; and

one or more wafer spacers in said upper section recess protruding above the upper surface of said recess for supporting a wafer.

58. A method of maintaining uniform temperature on a semiconductor wafer during high temperature processing of the wafer comprising:

positioning the wafer on one or more spacers extending upwardly from a susceptor so that the wafer is substantially thermally decoupled from the susceptor;

heating the wafer and susceptor with an upper heat source spaced above the wafer and a lower heat source spaced below the susceptor;

maintaining relatively constant the ratio of heat provided by the upper and lower heat sources when the wafer and susceptor are both at a desired temperature; and

when rapidly changing the temperature of the wafer and the susceptor, changing said ratio so as to maintain the wafer and the susceptor at substantially the same temperature as their temperatures are changing.

59. The method of Claim 58, wherein said ratio changing includes reducing the percentage of heat provided from the upper source when rapidly increasing the temperature of the wafer and the susceptor.

60. The method of Claim 59, wherein said ratio changing includes increasing the percentage of heat provided from the upper heat source, when allowing the temperature of the wafer and the susceptor to decrease, while continuing to provide some heat to the wafer and the susceptor to maintain uniformity.

61. Apparatus for processing a substrate comprising:

a susceptor for supporting a substrate;

an upper heat source spaced above the susceptor;

a lower heat source spaced below the susceptor; and

a controller providing power to said heat sources at a selected ratio between said sources, said controller being configured to vary said ratio during a high temperature processing cycle of a substrate to thereby vary the ratio of the heat provided by the heat sources during the cycle.

62. The apparatus of Claim 61, wherein said heat sources are radiant heating lamps, and one or more upper lamps and one or more lower lamps are controllable as a unit by said controller.

63. The apparatus of Claim 62, wherein the controller is configured to maintain the power output substantially constant while varying the ratio between said heat sources.

64. An apparatus for processing a generally planar substrate comprising:

a susceptor having an area for receiving said substrate in a generally horizontal orientation;

one or more spacers extending above the susceptor to support the substrate and form a gap between the substrate and the susceptor;

one or more passages in said susceptor for introducing sweep gas into said gap to flow radially outwardly from beneath the substrate; and

a blocker ring supported on said susceptor at the periphery of said area to be beneath an outer annular portion of the substrate, the ring being configured to block radial flow of sweep gas and block deposition gas from flowing into said area.

65. The apparatus of Claim 64, wherein the ring is configured to create a thin annular purge gas passage between the ring and the substrate.

66. The apparatus of Claim 65, wherein said ring has a thin generally rectangular cross-section.

67. The apparatus of Claim 66, wherein said ring has an annular rib extending upwardly from a main body portion of the ring.

68. The apparatus of Claim 67, wherein said rib is approximately centered between inner and outer diameters of the ring.

69. The apparatus of Claim 68, wherein the rib has a generally flat upper surface with rounded corners.

70. The apparatus of Claim 69, wherein said rib flat upper surface is about .020 inches in radial dimension.

71. The apparatus of Claim 69, wherein said rib flat upper surface has a radial dimension which is about a third of the radial dimension of the rib.

72. The apparatus of Claim 66, wherein said rib is located adjacent the inner diameter of the ring, thereby making the ring cross section approximately L-shaped.

73. The apparatus of Claim 64, wherein said ring has a plurality of circumferentially spaced legs which create a plurality of circumferentially spaced passages between the ring and the susceptor, whereby restricted sweep gas flow is permitted above and below the ring.

74. The apparatus of Claim 64, wherein said spacers are integral with said ring extending upwardly from a main body portion of the ring to create circumferentially spaced passages between the ring and the substrate.

75. The apparatus of Claim 74, wherein said ring includes a plurality of circumferentially spaced legs depending from a main body portion of the ring, thereby creating a plurality of circumferentially spaced passages between the ring and the susceptor.

76. The apparatus of Claim 75, wherein said spacers are circumferentially spaced from said legs so that a thermal path between the bottom surface of a leg and the top surface of an adjacent spacer is greater than the height of the ring including the spacer and the leg.

77. The apparatus of Claim 64, wherein said gap is about 0.75 of an inch and said ring is about .065 of an inch in vertical dimension.

78. The apparatus of Claim 64, wherein said susceptor has a shallow recess which forms said substrate receiving area.

79. The apparatus of Claim 64, wherein said susceptor includes a substantially disk-shaped lower section and a substantially disk-shaped upper section, having a lower surface in engagement with an upper surface of said lower section, said one or more gas passages being defined by engaging surfaces of said sections, one or more gas inlets in said lower section opening to its lower surface in said passages, and one or more gas outlets in said upper section opening into said gap.

80. The apparatus of Claim 79, including a support for said susceptor, having a central shaft and a plurality of support arms extending radially and upwardly from said shaft, with the arms having upper ends adapted to engage the lower surface of said susceptor to support the susceptor, one or more of said arms being tubular so that said sweep gas may be conducted through said tubular arms into said inlets.

81. An apparatus for processing a semiconductor wafer comprising:

a horizontal susceptor having a recess in an upper surface; and

a blocker slightly smaller than an inner diameter of the recess to fit within the recess between a wafer and the susceptor at the outer periphery of the wafer.

82. The apparatus of Claim 81, wherein said blocker is configured to create one or more gas passages between the susceptor and the wafer that permit sweep gas to flow radially outward from beneath the wafer while blocking deposition gas from flowing radially beneath the wafer.

83. The apparatus of Claim 82, wherein said blocker is in the form of a ring and has an annular rib extending above a main body portion.

84. The apparatus of Claim 83, wherein said ring has a plurality of circumferentially spaced feet depending from the main body portion.

85. The apparatus of Claim 83, wherein said rib is centrally positioned between inner and outer diameters of the ring.

86. The apparatus of Claim 83, wherein said rib is positioned adjacent an inner diameter of the ring.

87. The apparatus of Claim 82, wherein said blocker has a plurality of upwardly extending lands which create said gas passages.

88. The apparatus of Claim 87, wherein said blocker has a plurality of circumferentially spaced legs which create said gas passages.

89. The apparatus of Claim 88, wherein said legs are circumferentially spaced from said lands.

90. The apparatus of Claim 87, wherein said blocker is configured to support said wafer.

91. An apparatus for processing a semiconductor wafer comprising:

a blocker to be positioned on a susceptor and beneath the periphery of a wafer, said blocker having an upwardly extending rib.

92. The apparatus of Claim 91, wherein the blocker has a plurality of circumferentially spaced feet depending from a main body portion.

93. An apparatus for processing a semiconductor wafer comprising a ring to be positioned on a susceptor and beneath the periphery of a semiconductor wafer, said ring having a plurality of circumferentially spaced lands extending upwardly from a main body portion.

94. The apparatus of Claim 93, wherein said ring has a plurality of circumferentially spaced feet depending from the main body portion.

95. The apparatus of Claim 94, wherein said feet are circumferentially offset from said lands.

96. A method of supporting a substrate during high temperature processing of the substrate, comprising:

positioning the substrate spaced above a susceptor so that the wafer is substantially thermally decoupled from the susceptor; and

positioning a blocker ring on said susceptor beneath the outer periphery of said substrate.

97. The method of Claim 96, including supporting said wafer on said ring.

98. The method of Claim 96, including supporting said wafer on one or more spacer extending above the susceptor.

99. The method of Claim 96, including:

introducing sweep gas through passages in said susceptor into a gap between the substrate and the susceptor to cause the sweep gas to flow radially outwardly from beneath the substrate; and

creating one or more restricted passages past said blocker ring for said sweep gas, causing the velocity of the sweep gas to increase as it flows through said passages and restricting the flow of deposition gas into the area beneath the substrate.

100. The apparatus of Claim 15 wherein said pins have generally flat upper ends.

101. The apparatus of Claim 100 wherein said flat upper ends have rounded edges.

102. An apparatus for processing a semiconductor wafer, comprising a substantially disc-shaped susceptor having one or more gas flow passages formed therein, each of said one or more passages having an upper opening at an upper surface of the susceptor and a lower opening at a lower surface of the susceptor, the lower surface of the susceptor having three or more cavities positioned along a circle centered about a central vertical axis of the susceptor, the cavities configured to receive upper ends of support arms of a multi-armed support member configured to support and rotate the susceptor about the central vertical axis.

103. The apparatus of Claim 102, wherein the upper surface of the susceptor has an annular wall that defines a pocket configured to receive a semiconductor wafer.

104. The apparatus of Claim 102, further comprising a plurality of spacers extending upwardly from the upper surface of the susceptor and being configured to support a wafer slightly spaced from the upper surface.

105. The apparatus of Claim 102, wherein the susceptor is formed of graphite coated with a layer of silicon carbide.

106. The apparatus of Claim 102, wherein the lower opening of one of the one or more passages is located in one of the cavities, the lower opening configured to receive gas flow from an interior passage of one of the support arms of the multi-armed support member.

107. The apparatus of Claim 102, wherein the one or more passages include horizontal channels.

108. The apparatus of Claim 102, wherein the susceptor comprises an upper section and a lower section.

109. An apparatus for processing a semiconductor wafer, comprising:

a reaction chamber;

a susceptor within the reaction chamber, the susceptor having one or more gas flow passages formed therein, each of the one or more passages having an upper opening at an upper surface of the susceptor and a lower opening at a lower surface of the susceptor; and

a support member comprising a substantially vertical shaft and a plurality of support arms extending generally radially outward and upward from an upper section of the shaft, the arms being configured to support the susceptor such that a central vertical axis of the shaft is aligned with a central vertical axis of the susceptor, the support member configured to engage the susceptor such that rotation of the support member about the central vertical axis of the shaft causes the susceptor to rotate about the central vertical axis of the susceptor; and

a plurality of radiant heat elements configured to provide radiant energy to the reaction chamber.

110. The apparatus of Claim 109, wherein said support member is substantially transparent to radiant energy.

111. The apparatus of Claim 109, wherein the lower surface of the susceptor has three or more cavities positioned along a circle centered about the central vertical axis of the susceptor, the cavities configured to receive upper ends of the arms of the support member.

112. An apparatus for processing a semiconductor wafer, comprising a susceptor having one or more gas flow passages that permit gas flow between a region above the susceptor and a region below the susceptor, a lower surface of the susceptor having three or more cavities positioned along a circle centered about a central vertical axis of the susceptor, the cavities configured to receive upper ends of support arms of a multi-armed support member configured to support and rotate the susceptor about the central vertical axis.

113. A method of supporting a semiconductor wafer, comprising:

supporting a wafer on a susceptor;

permitting gas to flow through the susceptor between regions above and below the susceptor;

supporting the susceptor on a plurality of support arms that extend generally radially outward and upward from an upper section of a substantially vertical shaft, a central vertical axis of the shaft being aligned with a central vertical axis of the susceptor, the arms engaging the susceptor such that rotation of the shaft about the central vertical axis of the shaft causes the susceptor to rotate about the central vertical axis of the susceptor; and

rotating the shaft about the central vertical axis of the shaft.

114. The method of Claim 113, further comprising providing radiant energy to the wafer and susceptor.

115. The method of Claim 113, wherein the support arms and the shaft are transparent to radiant energy.

116. The method of Claim 113, wherein supporting the wafer on the susceptor comprises supporting the wafer on a plurality of spacers extending upwardly from an upper surface of the susceptor, such that the wafer is slightly spaced from the upper surface.

117. The method of Claim 113, wherein permitting gas to flow through the susceptor comprises permitting gas to flow through one or more gas flow passages in the susceptor, each of the one or more passages having an upper opening at an upper surface of the susceptor and a lower opening at a lower surface of the susceptor.

118. The method of Claim 117, wherein the one or more passages include horizontal channels inside the susceptor.

119. The method of Claim 113, wherein supporting the susceptor comprises inserting upper ends of the support arms into cavities within a lower surface of the susceptor, each of the cavities positioned along a circle centered on the central vertical axis of the shaft.